

REMARKS

New claims 30-32 are added. Claims 2-10 and 30-32 are pending in the application.

Claims 2, 10 and 4-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al., U.S. Patent No. 5,923,056 in view of Vossen and Kern, Thin Film Processes II. The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine references teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Claims 10, 2 and 4-8 are allowable over the combination of Lee and Vossen for at least the reason that as combined, the references fail to teach or suggest each and every limitation in any of those claims.

Independent claim 10 recites co-evaporating aluminum oxide and silicon monoxide and depositing at least some of the evaporated aluminum oxide and silicon monoxide on a semiconductive material substrate to form a silicon-doped aluminum oxide on the substrate. As discussed by the Examiner at page 4 of the present action, Lee does not disclose the recited co-evaporation of silicon monoxide and aluminum oxide. Further, Lee does not disclose or suggest the claim 10 recited depositing of at least some of the evaporated aluminum oxide and silicon monoxide to form a silicon-doped aluminum oxide. Vossen discloses evaporation of aluminum oxide and also discloses evaporation of silicon oxide. However, Vossen does not disclose co-evaporation of aluminum oxide and silicon monoxide.

As set forth by the Examiner at page 5 of the present action, the present rejection would be overcome by a showing that applicant's recited method provides unexpected results. The Examiner indicates that the unexpected results should be present in the resulting silicon-doped aluminum oxide film. However, since the present claims are methods claims, the present rejection would be overcome by advantages afforded by the recited features upon the method. Such advantages are set forth in the applicant's specification at, for example, page 11, line 18 through page 13, line 7. The text at this portion of the applicant's specification discusses the benefits of utilizing silicon monoxide for film formation. As discussed, utilization of silicon monoxide allows lower temperature evaporation processes than would be possible utilizing silicon, silicon dioxide or silicon nitride (pg 11, ln 23 through pg 12, ln 2). Additionally, the use of silicon monoxide allows the method to utilize cooler substrates, and can be relatively cheap, simple, and easier to control than alternatives (pg 12, lns 14-22).

In addition to the benefits discussed above, utilization of silicon monoxide can additionally supply oxygen to decrease or cure any oxygen deficiency of the evaporated aluminum oxide as discussed in applicant's disclosure at, for example, page 8, line 17 through page 9, line 4. Vossen discloses oxygen deficits in aluminum oxide films (pg 113, table 3) but does not teach or suggest minimizing or overcoming the oxygen deficit utilizing silicon monoxide. As combined, Lee and Vossen fail to disclose or suggest the claim 10 recited co-evaporating aluminum oxide and silicon monoxide and depositing at least some of the evaporated aluminum oxide and silicon monoxide to form a silicon-doped aluminum oxide. Additionally, the claim 10 recited method utilizing co-evaporating of aluminum oxide and silicon monoxide confers specific advantages. Accordingly, independent claim 10 is

not rendered obvious by the combination of Vossen and Lee and is allowable over these references.

Dependent claims 2 and 4-8 are allowable over the combination of Lee and Vossen for at least the reason that they depend from allowable base claim 10.

Claims 3 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee in view of Vossen and further in view of either JP 60-167352 A ('352) or Wolf, 1986. As discussed above, independent claim 10 is not rendered obvious by the combination of Lee and Vossen. Neither '352 nor Wolf teach or suggest the claim 10 recited co-evaporating aluminum oxide and silicon monoxide and depositing at least some of the evaporated aluminum oxide and silicon monoxide to form a silicon-doped aluminum oxide. As combined, Lee, Vossen, and either of '352 or Wolf, fail to teach or suggest each and every limitation of independent claim 10. Accordingly, independent claim 10 is allowable over the cited combinations of Lee, Vossen, Wolf and '352. Dependent claims 3 and 9 are allowable over the cited combinations of Lee, Vossen, Wolf and '352 for at least the reason that they depend from allowable base claim 10.

New claims 30-32 do not add "new matter" to the application since each is fully supported by the specification as originally filed. Claim 30 is supported by the specification at, for example, page 10, lines 16-18; page 11, line 3 and lines 18-20. New claim 31 is supported by the specification at, for example, page 9, lines 5-10. New claim 32 is supported by the specification at, for example, page 11, lines 18-20.

For the reasons discussed above claims 2-10 are allowable and claims 30-32 are believed allowable. Accordingly, applicant respectfully requests formal allowance of claims 2-10 and 30-32 in the Examiner's next action.

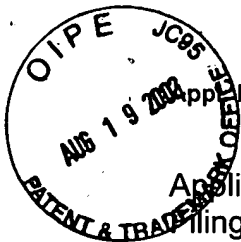
The Examiner indicates at page 2 of the present action that the information disclosure statement filed on April 23, 2002 failed to comply with the provisions of 37 CFR § 1.97 and 1.98 and MPEP § 609 due to the absence of appropriate indication of date of publication of the references. Applicant submits herewith an additional IDS which properly indicates the month and year of publication of each reference or properly indicates that the year of publication is sufficiently early so that the particular month of publication is not in issue. Accordingly, applicant respectfully requests consideration of the references listed in the IDS during the examination of the pending claims.

The Examiner indicates that the proposed drawing correction submitted on April 23, 2002 has been approved. The Examiner further indicates that corrected drawings are required in reply to the present action. Included herewith is applicant's letter submitting formal drawings. Accordingly, applicant respectfully requests acceptance of the formal drawings into the file.

Respectfully submitted,

Dated: August 19, 2002

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App. No. 09/754,926

Application Serial No.09/754,926
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Inventor.....Ahn et al.
Assignee.....Micron Technology, Inc.
Group Art Unit.....2813
Examiner E. Kielin
Attorney's Docket No.MI22-1533
Title: Methods of Forming Assemblies Comprising Silicon-Doped Aluminum Oxide

VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING
RESPONSE TO MAY 20, 2002 FINAL OFFICE ACTION

In the Claims

The claims have been amended as follows. Underlines indicate insertions and
~~strikeouts~~ indicate deletions.

New claims 30-32 are added.

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